

**REMARKS/ARGUMENTS**

Claims 1-5, 7-16, and 18-23 are pending in the present application. Claims 1 and 14 are independent claims. Claims 6 and 17 have previously been cancelled.

**Obvious Double Patenting Rejection**

Claims 1-25 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-23 of co-pending application no. 09/777,774. This rejection, insofar as it pertains to the presently pending claims, is respectfully traversed.

Concurrently filed herewith is a Terminal Disclaimer of the present application relative to co-pending application no. 09/777,774. This Terminal Disclaimer clearly overcomes the obviousness-type double patenting rejection made above.

Although Applicants do not agree with the Examiner's rejection, the filing of this Terminal Disclaimer clearly overcomes the obviousness-type double patenting rejection. Therefore, Applicants respectfully request reconsideration and withdrawal thereof.

**Art Rejections**

Claims 1-5, 8-16 and 19-23 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Terahara (USP 6,535,309) in view of Barnard (USP 6,219,162). Claims 3 and 16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Terahara, Barnard and further in view Xiao (U.S. Patent Publication No. 2002/0101636 A1). These rejections, insofar as they pertain to the presently pending claims, are respectfully traversed.

The Office Action admits that Terahara does not disclose "where said gain element having a gain profile substantially matching a gain profile of the signal input to the add/drop module." (see page 4, first full paragraph of Office Action).

First of all, Applicants agree with Office Action's admission in that Terahara certainly does not disclose the claimed gain element having a gain profile substantially matching a gain profile of the signal input to the add/drop module.

Applicants also point out, however, that claim 1 particularly as amended recites more than this feature. Specifically, claim 1 now recites that the gain element and the optical amplifier have substantially matching gain profiles. Recall that the optical amplifier supplies the input signal that is input to the add module and to which the add signals are

added. The added signals are fed through the gain element before being added to the input signal. It is the gain profiles of the gain element and the optical amplifier that are now claimed as being matching. More specifically, the relevant portion of the gain profile of the optical amplifier and gain element are claimed as being substantially matching such that a portion of a gain profile of the optical amplifier corresponding to a spectrum associated with the added at least one channel substantially matches a portion of a gain profile of the gain element corresponding to the spectrum. This feature is certainly not found in Terahara.

Although Barnard is applied to teach these features, a closer examination of Barnard will reveal that this patent is insufficient to reject these features.

Barnard is actually directed to equalizing WDM systems. More specifically, and as discussed in column 3, line 42 through column 4, line 3, the entire purpose of Barnard is to equalize the bit error rate (BER) for all channels in the WDM signal. This is seen by Barnard as being preferable to equalizing optical to signal noise ratio (OSNR). In other words, the goal of Barnard is to equalize the BER values for each of the channels in a WDM system.

To accomplish this BER equalization purpose, Barnard utilizes a network set-up procedure which is as follows. During initial set-up of the WDM system, the optimum transmitter launch power for all channels is determined by utilizing a performance monitoring (network monitoring unit 24) that monitors the BER value. In this way, the optimum launch power is determined for each of the channels of Barnard system so as to equalize the BER for each channel.

Nowhere does Barnard disclose or suggest gain profile matching. More particularly, nowhere does Barnard disclose or suggest matching the gain profiles of the input optical amplifier and the gain element (on the add path for the added channels). More specifically, and as recited in amended claim 1, Barnard does not disclose or suggest wherein the gain element (applying gain to the added at least one channel) and the optical amplifier (amplifying the input signal supplied by the add module) has substantial matching gain profiles. Even more specifically and as also recited in claim 1, this gain profile matching further specifies such that a portion of a gain profile of the optical amplifier corresponding to a spectrum associated with the added at least one channel substantially matches a portion of a gain profile of a gain element corresponding to the spectrum.

In other words, the relevant portion of the gain profiles of the input optical amplifier and the gain element on the add path should substantially match. There is no teaching anywhere in Barnard of such a gain profile matching. Recall also that a gain profile is the gain of an optical amplifier as a function of wavelength. Gain profiles for optical amplifiers and gain elements vary quite substantially. One such gain profile is shown in Fig. 7. The invention now more particularly recited in the amended independent claims 1 and 14, requires that the gain profile of the input optical amplifier and the gain element (on the add path) substantially match. This is a very different problem than the BER equalization procedure disclosed by Barnard. It is simply not seen how there is any disclosure in Barnard even remotely suggesting gain profile matching of an input amplifier and an add path gain element as claimed.

Likewise, the method recited in amended claim 14 also patentably distinguishes over the applied art. More specifically and as recited in amended claim 14, there is no disclosure or suggestion of the gain element and the optical amplifier having substantially matching gain profiles.

The cited sections of Barnard certainly do not teach or suggest the gain profile matching particularly as claimed, (see column 1, lines 40-50 and column 11, lines 5-15). The sections

of Barnard cited by the Office Action actually discuss the equalization of the BER between channels by adjusting the transmitter powers. This is quite a substantially different procedure that is not disclosing or suggesting of the optical amplifier input optical amplifier and add path gain element gain profile matching that is now more particularly recited in the independent claims.

As to Xiao, the further addition of the Xiao reference to the base combination of Terahara and Barnard also fail to disclose or suggest the invention as recited in the independent claims 1 and 14. Indeed, Xiao is merely applied to teach certain details of particular equations recited in dependent claims which are not the focus of the arguments herein. Although Applicants do not necessarily agree with the statements made by the Office Action in relation to Xiao, Applicants wish to focus the patentability of the present application on the independent claims 1 and 14. In those terms, Xiao adds nothing to the base combination of Barnard and Terahara.

For all of the above reasons, taken alone or in combination, Applicants respectfully request reconsideration and withdrawal of the art rejections.

Conclusion

In view of the above amendments and remarks, reconsideration of the rejections and allowance of all of the claims are respectfully requested.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Michael R. Cammarata (Reg. No. 39,491), at the telephone number of (703) 205-8000, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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